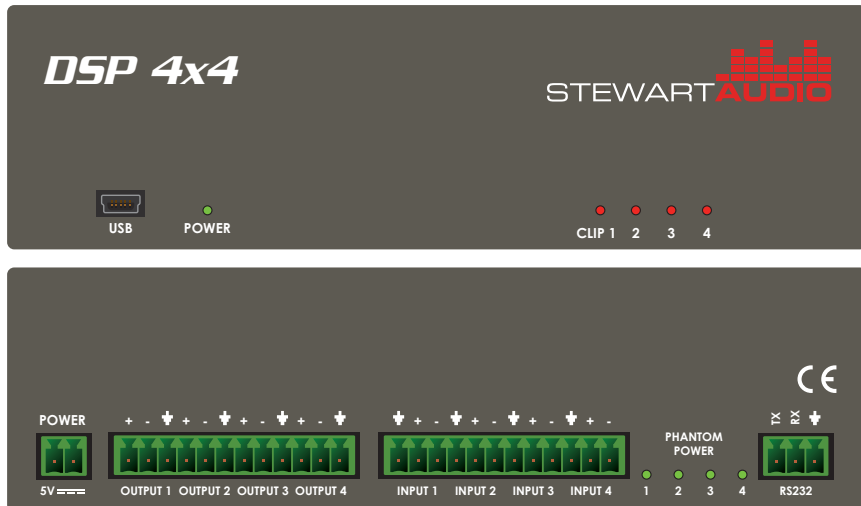


STEWART AUDIO

The Difference is Hear



DSP 4x4

Owner's Manual

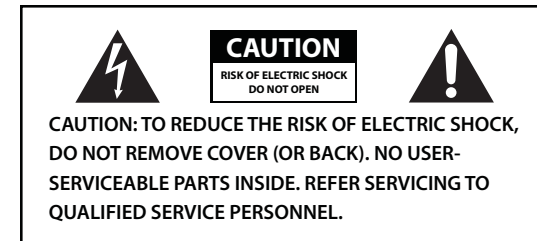
September 2013

www.stewartaudio.com

Important Safety Instructions

Before using your Stewart Audio Inc. Product, please read this **Owner's Manual** carefully to ensure optimum trouble-free performance.

WARNING: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT EXPOSE THIS AMPLIFIER TO RAIN OR MOISTURE. DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDE THE ENCLOSURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.



The lightning bolt within arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electrical shock to person.



The exclamation point within an equilateral triangle, is intended to alert the user to the presence of important operating and maintenance (servicing) instruction in the literature accompanying the appliance.

Important Safety Instruction – Please Read Prior to Product Installation.

1. Installation should be performed by a trained and licensed professional to insure safe and lasting operation.
2. All of the safety and operating instructions should be read before the amplifier is installed or operated. Retain these instructions for future reference. All instructions should be followed; all warnings on the amplifier and in the operating instructions should be adhered to.

3. The unit should be situated so that its location and position does not interfere with its proper ventilation. For example, the unit must not be placed on a rug, bed, sofa or similar surface that impedes airflow across the chassis. Airflow through the ventilation openings should be unobstructed.
4. This unit should not be used near water, for example, near a bathtub, in a wet basement, near a swimming pool, etc. This unit is intended to be operated in a controlled indoor environment.
5. Do not place the unit near heat sources such as radiators, heat registers, stoves, or other appliances that produce heat.
6. The unit should only be connected to 120-240 VAC, 50-60 Hz power supply. Do not defeat the ground or polarization of the power plug.
7. Route power cord and other cables so that they are not likely to be walked on, tripped over or stressed. Pay particular attention to condition of cords and cables at plugs and at the point where they exit the amplifier. To prevent risk of fire or injury, damaged cords and cables should be replaced immediately.
8. Clean the unit with a clean, damp cloth. Do not use solvents or abrasive cleaners. Never pour any liquid on the unit.
9. When left unused for a long period of time, the power cord should be unplugged from the outlet.
10. Damaged units requiring service should be repaired by a qualified service technician when:
 - a. The power cord or AC plug has been damaged.
 - b. Objects have fallen, or liquid has spilled into the unit.
 - c. The unit has been exposed to rain or other moisture.
 - d. The unit does not appear to operate normally or exhibits a marked change in performance.
 - e. The unit has been dropped or the enclosure damaged.
11. The user should not attempt to service the unit beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

Table of Contents

Important Safety Instructions.....	2
Table of Contents.....	4
1 Welcome	5
1.1 Features.....	5
1.2 Using this Manual.....	5
2 Setup	6
2.1 Setup Precautions	6
2.2 Product Installation	6
2.3 Input Connections	8
2.4 Output Connections	12
2.5 RS232 Connection.....	12
3 Operation	13
3.1 Operation Precautions	13
3.2 Controls and Indicators.....	14
3.3 RS232 Commands	16
4 Troubleshooting	17
5 Technical Specifications	18
6 Warranty Information	19
6.1 Warranty Summary	19
6.2 Return Procedure	19
7 Accessories	22
8 Notes	23



1 Welcome



Congratulations on your purchase of the new Stewart Audio DSP 4x4. This unit has been designed and built to provide you with years of high-quality audio performance and trouble-free operation. If after reading this manual you should have any questions concerning amplifier installation and operation, please contact your Authorized Stewart Dealer, or you may contact us directly using the contact information provided on the back of this manual.

1.1 Features

Your Stewart Audio DSP 4x4 is the result of years of experience in the design and manufacture of quality audio products. As such it provides a combination of performance and operational benefits that simply cannot be found in conventional audio products

- 4 channels of digital signal processing
- Configurable via USB Port
- RS232 connection for remote control
- 1/3 rack package
- Made in the USA

1.2 Using this Manual

In order to obtain maximum performance from your DSP 4x4 please take time to read this brief owner's manual and carefully follow the guidelines for connection and operation.

This manual provides you with the information necessary to safely install and operate your new DSP 4x4 in the most common scenarios. If you find yourself requiring additional assistance, please feel free to contact your Authorized Dealer, or you may contact us directly using the contact information provided on the back of this manual.

2 Setup

2.1 Setup Precautions



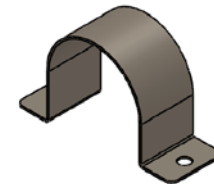
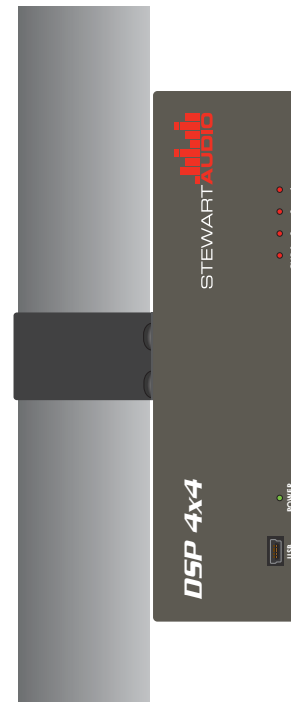
CAUTION: Before installing your unit, make sure that you have read the Important Safety Precautions at the beginning of this manual.

2.2 Product Installation

The DSP 4x4 incorporates a number of different mounting options in order to fit your installation needs.

2.2.1 Pole-Mounting

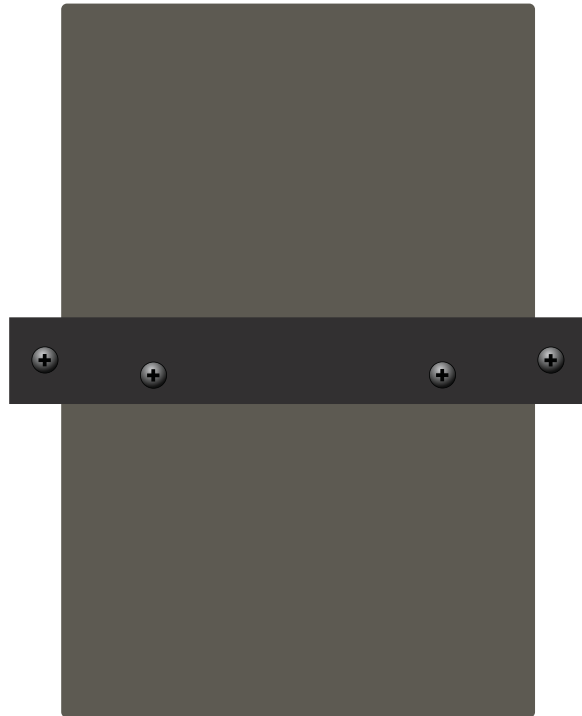
The DSP 4x4 has mount holes on the top of the unit which can be used with the AV-Pole bracket available from Stewart Audio.



Part Number: AV-Pole

2.2.1 Universal-Mount Installation

The DSP 4x4 also has a universal bracket available which allows the unit to be mounted against a wall or under a table. Two screws are included in the kit which will affix the bracket to the top of the unit. Once this is done, two holes are available for mounting the unit where desired.



Part Number: AV-Bracket



CAUTION: Use only the screws provided in mounting brackets to the unit. Do not over tighten.

2.2.3 Product Dimensions

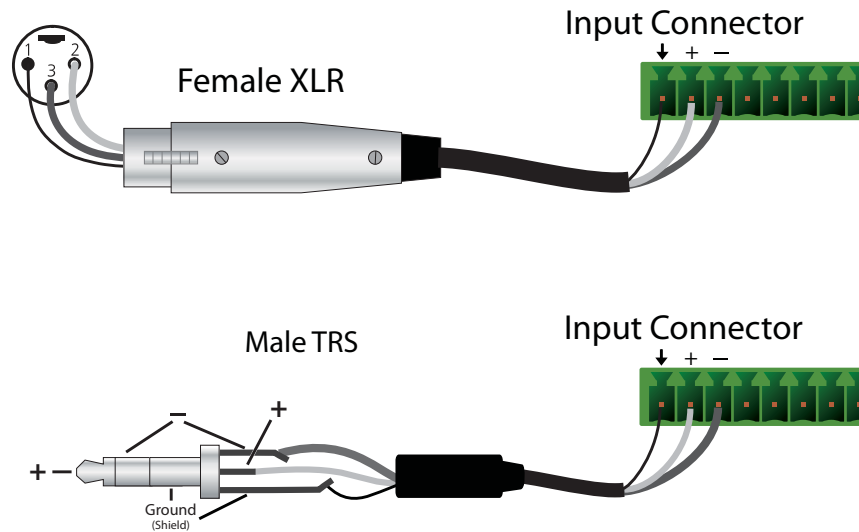


2.3 Input Connections

Your DSP4x4 is provided with a 3-pin Phoenix connector for each input. This connector will accept both balanced or unbalanced connections, however some modifications must be made for an unbalanced connection. See the next two sections for instructions on connecting the DSP 4x4 to its input source.

2.3.1 Balanced Connections

When using a balanced input source and connector, you must ensure that the hot, cold, and ground pins of the connector are matched up to the +, -, and ground pins of the DSP 4x4's Phoenix connector respectively. Diagrams have been provided for standard XLR and TRS connectors. Please refer to the manual of your input source in case it does not follow the standard pin-out.

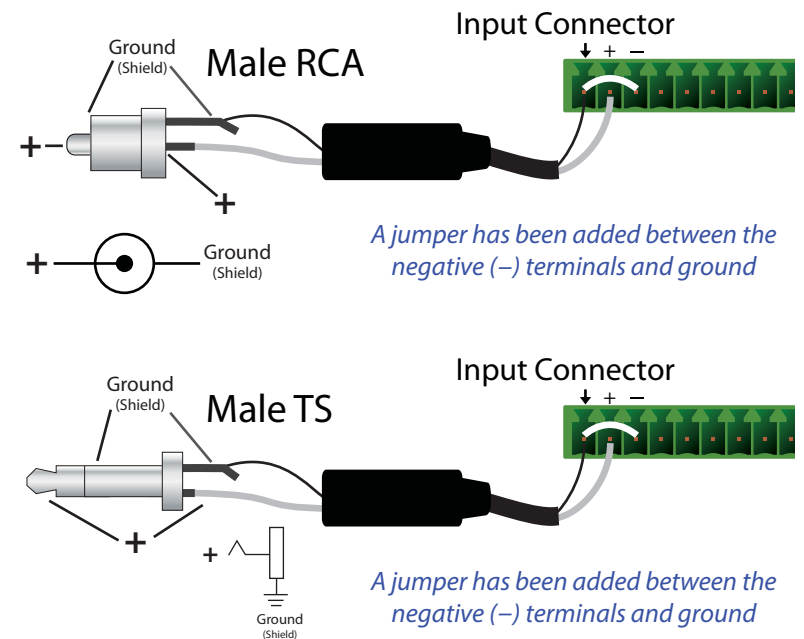


2.3.2 Unbalanced Input Connections

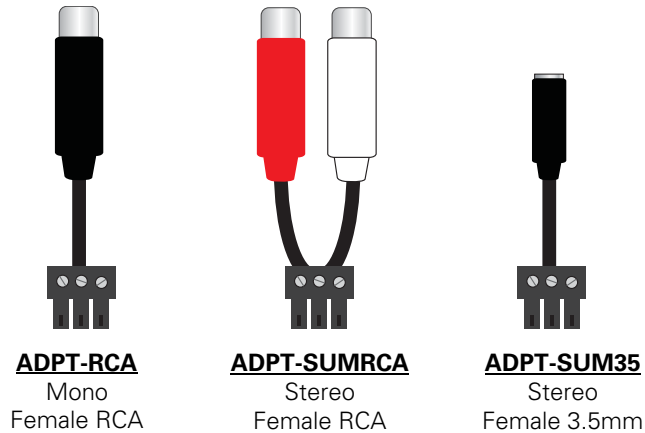
When using an unbalanced input source and connector, a jumper must be added between the negative (-) terminals and the ground terminals. Once this has been done, the unbalanced source can be connected to the positive (+) and ground terminals. Please refer to the manual of your input source in case it does not follow the standard pin-out. For your convenience, pre-wired connectors are available for purchase, see the next page for details.



NOTE: A jumper is required for connecting an unbalanced input.



Pre-wired unbalanced connectors are available for purchase from Stewart Audio. The summing adapters will properly sum a stereo source for use with the mono input on the rear of the DSP 4x4 without causing sound cancellation. Part numbers are found below the diagrams.



2.3.3 Phantom Power

The DSP 4x4 is designed with software-selectable 24VDC phantom power on all 4 channels capable of supplying 25mA per channel. This power level is sufficient to operate most condenser microphones in a typical DSP 4x4 application.

Phantom power can be switched on/off via the Stewart Audio Control Center Software or using RS232 commands documented in **section 3.3**.

When phantom power is being supplied on a channel, the appropriate LED indicator on the rear of the DSP 4x4 will illuminate.

CAUTION: Microphones or other input devices which do not require phantom power can be permanently damaged by the application of phantom power. Stewart Audio will not be held responsible for damage to these devices.

2.4 Output Connections

Your DSP 4x4 is provided with a 3-pin Phoenix connector for each output. This connector offers a balanced output to interface with the input of another device.

Connection methods for balanced and unbalanced outputs are identical as the methods for inputs as referenced in **section 2.3**.

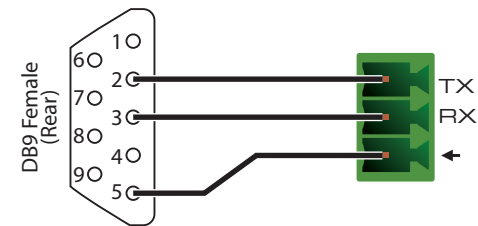


NOTE: Early versions of the DSP 4x4 ship with different input and output pin configurations. Pay careful attention to the silk-screened labels on the rear of the unit.

2.5 RS232 Connection

Your DSP 4x4 can be controlled using the RS232 connection on the rear of the device. For the available RS232 commands, **see section 3.3**.

All communications should be performed at 9600 baud, 8 bits, 1 stop bit, no parity, and no flow control.



NOTE - TX and RX labelings are relative to the Stewart Audio Device

3 Operation

3.1 Operating Precautions

- 1. Before use, your DSP 4x4 must be configured to customize its operation, including input and output wiring hookup. Improper wiring can result in damage to equipment or potentially harm to the operator. Consult section 2 for setup instructions.
- 2. Tampering with the circuitry, or making unauthorized changes is not only dangerous but may also violate local regulations.
- 3. Use care when making connections between the unit and the input or output equipment.

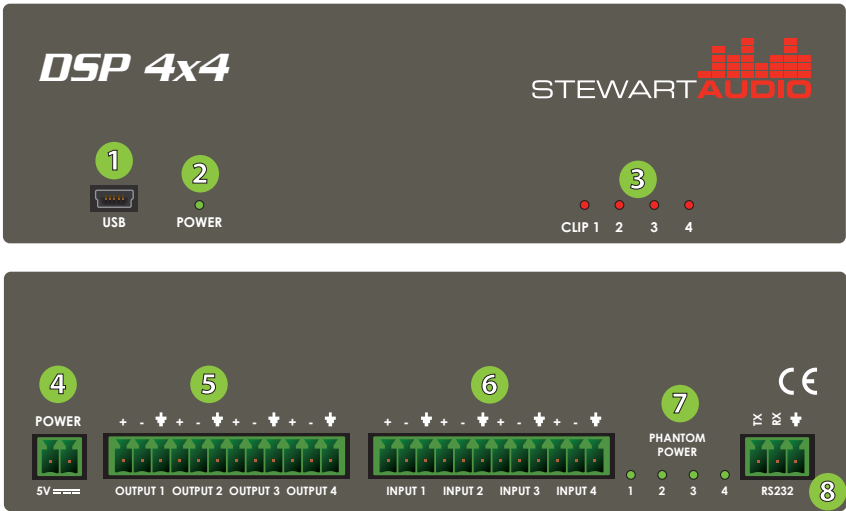


NOTE: Stewart Audio will not be held responsible for damage to your DSP 4x4 or connected equipment if the instructions in this manual are not followed.



NOTE: For additional operating precautions, please refer to “Important Safety Instructions” located on Page 2.

3.2 Controls and Indicators



- | | |
|---------------------------|-------------------------------|
| 1 USB 2.0 Connector | 5 Output Connections - 3.5mm |
| 2 Power LED | 6 Input Connections - 3.5mm |
| 3 Clip Indicator LED | 7 Phantom Power Indicator LED |
| 4 Power Connector - 3.5mm | 8 RS232 Connector - 3.5mm |

3.2.1 Controls

The DSP 4x4 is configured entirely via USB programming. An RS232 connection allows remote control of select functions (**see section 3.3**). There is no power switch so the unit will remain on continuously when plugged in. Due to the inherently low power consumption design, there is no need for a sleep mode.

3.2.2 Indicators

The DSP 4x4 has 3 sets of LEDs to indicate power, channel clipping, and phantom power.

The green power LED on the front of the device will illuminate whenever the unit is plugged in.

The red clip LED's will illuminate momentarily when the DSP has detected that the signal is clipping within the processing chain. Unlike a power amplifier, this does not mean that harm is being done to the unit if it is driven while clipping for an extended period of time. Rather, this light indicates that the signal is clipping and will appear distorted on the outputs because it has exceeded the available 24dB headroom available on most processing blocks.

The green phantom power LED's will illuminate when 24VDC phantom power is being applied to a channel. This is switched via the DSP Control Center Software. For more information, please reference the **DSP Control Center Software manual**.

3.3 RS232 Commands

Command Name and Description	Hex Command
VOLUME_UP_10 Increases volume by 10% on CHAN	0x12 0x55 CHAN ¹ 0x03
VOLUME_UP_5 Increases volume by 5% on CHAN	0x12 0x75 CHAN ¹ 0x03
VOLUME_DOWN_10 Decreases volume by 10% on CHAN	0x12 0x44 CHAN ¹ 0x03
VOLUME_DOWN_5 Decreases volume by 5% on CHAN	0x12 0x64 CHAN ¹ 0x03
VOLUME_DISCRETE Sets CHAN volume to VOL	0x12 0x55 CHAN ¹ VOL ² 0x03
FORCE_MUTE_ON Turn mute off for CHAN	0x12 0x4D CHAN ¹ 0x03
FORCE_MUTE_OFF Turn mute on for CHAN	0x12 0x6D CHAN ¹ 0x03
MUTE_TOGGLE Toggle mute on CHAN	0x12 0x54 CHAN ¹ 0x03
CHANGE_PRESET_1 Change to preset 1 during operation	0x12 0x10 0x10 0x03
CHANGE_PRESET_2 Change to preset 2 during operation	0x12 0x11 0x11 0x03
CHANGE_PRESET_3 Change to preset 3 during operation	0x12 0x12 0x12 0x03
FIRMWARE_VERSION Returns the current version in the format: 0x02 0xXX 0xYY 0x03 (XX = Version, YY = Revision)	0x12 0x46 0x56 0x03

¹ The channel configuration is as follows:
0x00 = all channels, 0x01 = CH1, 0x02=CH2, etc..
² The volume is in the range 0-100 expressed in hexadecimal. This equates to a range of 0x00 - 0x64

4 Troubleshooting

Problem: No power LED indicator

Procedure: Ensure that only the provided 5VDC 1A power supply has been used and that it is connected to a live power outlet supplying 100-240VAC.

Problem: No RS232 communication

Procedure: Ensure that the connections are done as specified in **section 2.5**. Check that the communication is at 9600 baud. Shorten the cable lengths to see if it affects the communication

Problem: No output on individual channel

Procedure: Refer to the **DSP Control Center Software** manual for instructions on using live mode to meter the signal in the DSP signal path. If a condenser microphone is in use, ensure phantom power is being supplied. Check input connections (**see section 2.8**). Check that the volume on the audio source is at a sufficient level.

5 Technical Specifications

Frequency Response	20Hz—20kHz \pm 0.2dB
THD+N	<0.007%
Signal-to-Noise Ratio	>120dB at 0dB gain
Unweighted Crosstalk	<-95dB
Input Sensitivity	-40dB to +3dB
Input Impedance (Balanced/Unbalanced/Phantom)	20k Ω , 10k Ω , 2.4k Ω
Phantom Power	24VDC @ 25mA Software Controlled
D/A Conversion	24-bit, 48kHz
Current Draw	400mA @ 5VDC
Input Connectors	3.5 Euro Block
Output Connectors	3.5 Euro Block
LED Indicators	Power, Phantom Power, Clip
Controls	USB (Programming), RS232 (Operation)
Serial Control Port	Bidirectional RS232
Baud Rate & Protocol	9600 baud, 8 bits, 1 stop bit, no parity, no flow control
USB Control Port	Front panel female mini USB-B
USB Standards	USB 2.0 Low Speed
Program Control	Stewart Audio DSP Control Center
Power Supply Input	External in-line 5VDC (Included)
Construction	Aluminum Chassis
Cooling	Convection-Cooling
Mounting	Universal Bracket, Pole-Mountable
Dimensions	1.7" (4.3cm) H x 6.2" (15.7cm) W x 4.0" (10.3cm) H
Weight	0.6lbs (0.3kg)
Safety	CE (In Progress)
Environmental	RoHS
Warranty	3 years

6 Warranty Information

6.1 Warranty Summary

All Stewart Audio amplifiers and accessories, unless excluded in this summary, are covered by a 3-year limited warranty on parts and labor from the date of purchase. In order to be eligible for warranty repairs, the amplifiers and accessories must have been purchased through an authorized Stewart Audio dealer and submitted by the original purchaser. This warranty is only valid in the country in which the amplifier was purchased.

6.1.1 Eligibility Requirements.

Stewart Audio warrants against all malfunctions which come as a result of component or manufacturer defect. The amplifier is also covered from all failures which arise during the warranty period (3 years from date of purchase) that are not a result of misuse. The following actions will void your warranty:

- The power cord or AC plug has been damaged through misuse.
- The amplifier has been exposed to moisture or extreme temperatures.
- The amplifier has been dropped, items have been dropped on the amplifier, or the enclosure has been damaged.
- The amplifier has been opened by the operator.
- The amplifier was improperly packaged when sending to the factory for repair, resulting in damage.
- Any of the precautions or instructions found in this manual were not followed.

Damages resulting to the amplifier which are not covered under this warranty can be factory-repaired at cost to the customer. Use the contact information below to initiate the repair process.

6.2 Return Procedure

This section includes the return procedures which must be followed in order to prevent processing delay or cost to the customer. Please read the entire section before contacting Stewart Audio for returns.

6.2.1 Return Authorization Number

All returns to the factory for service must be accompanied by a Return Authorization (RA) number. One can be obtained by contacting Stewart Audio at (209) 588-8111 or via e-mail at support@stewartaudio.com.

NOTE: Any defective products received without an RA number will be returned to sender at their expense.

If Stewart Audio is unable to contact the sender in 14 days, the merchandise will be considered scrap and may be disposed of.

6.2.2 Shipment Instructions

If Stewart Audio requests that you ship the defective product back to their service center, please refer to the guide below. To ensure prompt warranty service, be sure to follow all instructions.

1. Return Authorization (RA) is required for product being sent to the factory for service.
2. See packing instructions in **section 6.2.3**.
3. Ship the defective product using a method which provides for order tracking or order confirmation. The service center is located at the following address:

Stewart Audio
14397 Cuesta Court Suite D1
Sonora, CA 95370

4. Use a bold black marker and write the RA number on three sides of the box.
5. Record the RMA number for future reference. The RA number can be used to check the repair status.

6.2.3 Packaging Instructions

Should Stewart Audio request that you ship your product to their service center, these instructions must be followed in order to ensure safe delivery. If they are not followed, Stewart Audio assumes no responsibility for damaged goods and/or accessories that are sent with your unit.

6.2.3 Packaging Instructions (cont.)

1. Please write the RA number on three sides of the box. Include the Stewart Audio RA number inside the box and a brief description of the problem.
2. You will be advised during the RA process what accessories should be included with the amplifier (Power supplies, connectors, cords, etc.). This is dependent on the failure assessment.
3. When shipping your amplifier, it is important that it has adequate protection. We recommend you use the original packing material when returning the product for repair. If you do not have the original box, see number 4.
4. If you provide your own shipping pack, the minimum recommended requirements for materials are as follows:
 - a. 275 P.S.I. burst test, Double-Wall carton that allows for 2-inch solid Styrofoam on all six sides of unit or 3 inches of plastic bubble wrap on all six sides of unit.
 - b. Securely seal the package with an adequate carton sealing tape.
 - c. Do not use light boxes or "peanuts".

NOTE: Damage caused by poor packaging will not be covered under warranty.

6.2.4 Payment of Non-Warranty Repairs

Payment for non-warranty repairs must be submitted to Stewart Audio before the product will be returned to the customer.

7 Accessories

The following accessories are available from Stewart Audio for your amplifier.

All part numbers shown are Stewart Audio Part Numbers.

Mounting Brackets

AV-POLE	Pole-mount bracket for AV Series amplifiers
AV-BRACKET	Universal mounting bracket for AV Series amplifiers

Connection Adapters

ADPT-RCA	Mono Female RCA to male Euroblock.
ADPT-SUMRCA	Stereo Female RCA to male Euroblock.
ADPT-SUM35	Stereo Female 3.5mm to male Euroblock

To purchase these accessories or to see the full Stewart Audio product lineup, visit us at:

www.stewartaudio.com

8 Notes



For Your Record

In the spaces provided below, record the model and serial number located at the rear of your amplifier.

[Retain this information for future reference.](#)

14397 Cuesta Court
Suite D1
Sonora, Ca. 95370

Phone: 209-588-8111
Fax: 209-588-8113